

Exhibit 3

Marsh Implementation Plan

1.0 INTRODUCTION

To compensate for the interim loss of ecological services from intertidal salt marsh and subtidal benthic habitat, resulting from releases of hazardous substances at or from the Alcoa Point Comfort/Lavaca Bay Site and the loss of aquatic habitat due to remedial actions in Lavaca Bay, Alcoa shall construct a minimum of 69.3 acres of intertidal saltmarsh on the north shore of Powderhorn Lake in the Matagorda Bay system in the approximate location depicted as the Restored Marsh area on Annex 3-A attached hereto. The constructed marsh will be similar to adjacent natural marshes and will be constructed pursuant to a plan designed to maximize habitat value to provide ecological services important for the continued success of estuarine biota in Lavaca Bay. It is anticipated that the ecological services provided by the constructed marsh will benefit a wide range of biological resources, including developing and adult finfish; juvenile shrimp and crabs; oysters and other benthic invertebrates; shorebirds, migratory waterfowl, and avian marsh predators.

The north shore of Powderhorn Lake was selected as the site for marsh construction because it is near the impacted area and will promote the preservation of potentially threatened coastal habitat. Long-term success of the created ecosystem and adjacent natural marsh will be advanced by the construction of a permanent breakwater between the constructed marsh system and the open waters of Powderhorn Lake. The selected construction site is adjacent to a thriving natural marsh and will be managed by DOI/FWS as a part of the Aransas National Wildlife Refuge.

The Trustees have determined that if the constructed marsh meets the construction and performance criteria outlined in this plan, there is reasonable assurance that the ecological services needed to offset service losses will be provided over time.

The performance criteria define short-term milestones that, if met, will provide reasonable assurance of project success in the long-term. Monitoring provides the information necessary to determine whether the project is trending toward these milestones or whether corrective action may be appropriate.

2.0 PROJECT IMPLEMENTATION

2.1 Construction Criteria

Alcoa shall implement the selected marsh restoration alternative described in the Final Ecological DARP ("Marsh Restoration Project") in accordance with the following construction criteria:

a. Onshore Marsh. Construct an intertidal marsh by excavating and grading approximately 30.3 acres ("Onshore Marsh") at the approximate location depicted as the "31 Acres of Restored Marsh-Onshore" area shown on Annex 3-A. The Onshore Marsh shall be designed and constructed in accordance with the following requirements:

i. Surface soils at the construction site will be removed, stockpiled, and used to cover planting areas.

ii. Approximately 75% of the 30.3 acres will have an elevation between 0.5 and 1.6 NGVD, and no less than 70% of the 30.3 acres will be within this elevation.

iii. Approximately 25% of 30.3 acres will be open water, but no less than 20% and no more than 30% of the 30.3 acres will be open water.

iv. Two (2) to five (5) primary channels will be constructed to converge on the Freshwater Inflow Channel (described in Section 2.1.d below). The primary channels in the Onshore Marsh will be approximately 21 feet wide at the top of the cut and approximately 8 feet wide at the base with a side slope of approximately 3:1.

v. Secondary channels generally will provide connections between primary channels to provide cross flow, and connect primary channels with distal marsh areas. The secondary channels will be constructed so that all vegetated areas will be located within approximately ten (10) meters of a primary or secondary channel or open water.

b. Offshore Marsh. Construct approximately 39 acres of intertidal marsh by filling and grading submerged bay bottom ("Offshore Marsh") at the approximate location depicted as the "39 Acres of Restored Marsh-Offshore" area shown on Annex 3-A. The Offshore Marsh shall be designed and constructed in accordance with the following construction criteria:

i. Approximately 65% of the 39 acres will have an elevation between 0.5 and 1.6 NGVD, and no less than 60% of the 39 acres will be within this elevation.

ii. Approximately 35% of the 39 acres will be open water, but no less than 30% and no more than 40% of the 39 acres will be open water.

iii. Primary channels will be connected to gaps in the breakwater and will converge into 2 to 5 channels prior to entering the Onshore Marsh. The primary channels will be approximately 35 feet wide at the top of the cut and approximately 10 feet wide at the base with a side slope of approximately 4:1. Channels will be constructed so that all vegetated areas will be located within approximately ten (10) meters of a primary or secondary channel or open water.

c. Breakwater. Construct a breakwater/wave barrier to enclose 39 acres of submerged bay bottom and to protect approximately 3,900 feet of Powderhorn Lake shoreline. The breakwater will be constructed to extend from the existing Aransas National Wildlife Refuge road, where it intersects the lake shore, to a point on the shoreline approximately 450 feet southwest of the mouth of the Foester Lake discharge channel. The breakwater will be designed in accordance with the cross-section detail depicted as Breakwater Section A-A on Annex 3-B, attached hereto, and the following additional construction criteria:

i. The breakwater will be approximately 4,900 feet long.

ii. The elevation of the crest of the breakwater will be no less than 0.5 feet above average high water.

iii. There will be 5 to 10 gaps in the breakwater that will connect to primary channels to provide a direct connection between the openings in the breakwater and all parts of the Onshore Marsh and the Offshore Marsh.

d. Freshwater Inflow Channel. A freshwater inflow channel, designed as a primary channel in the Onshore Marsh, will be excavated to connect drainage from Foester Lake to the upper end of the Onshore Marsh.

e. Transitional Zone. A Transitional Zone will be constructed between the Onshore Marsh and the surrounding coastal uplands with a slope of approximately 4:1. Approximately 0.5 feet of soil will be redistributed over the Transitional Zone from the top of the adjacent intertidal planting area to the edge of the surrounding coastal uplands.

f. Permanent Elevation Markers. Three to five permanent elevation markers will be established in the primary channels near the breakwater and on dry land adjacent to the Onshore Marsh.

2.2 Marsh Restoration Work Plan

Alcoa shall develop a Marsh Restoration Work Plan for its internal use. The Work Plan will be provided to the Lead Administrative Trustee for comment by the Trustees. The Work Plan will be used during contractor selection and to coordinate construction activities. The construction and planting schedule may be provided to the Lead Administrative Trustee separately from the remainder of the Work Plan. The Work Plan will contain the following information:

- a. Site Description:
 - i. Aerial photography of the site
 - ii. Current elevations of the site
 - iii. General description of existing vegetation at the site
- b. A general planting diagram showing planting areas bounded by supratidal shoreline and primary channels. Planting areas bounded by secondary channels will only be represented conceptually.
- c. Construction requirements, including construction criteria specified in Section 2.1, cross-sectional engineering drawings of the breakwater, a typical planting area, typical channel, and the transitional zone between the marsh and adjacent uplands.
- d. Planting criteria specified in Section 2.5.
- e. Construction schedule showing the chronological relationship between construction tasks. The actual start and finish date will be determined by environmental conditions.
- f. Planting schedule. The actual start and finish dates will be determined by ecological conditions.
- g. Copies of all permits or other authorizations necessary to carry out this Implementation Plan.

The Trustees have previously reviewed the draft Work Plan submitted on April 7, 2003 and found no material inconsistencies with the construction criteria in this Marsh Implementation Plan. The Trustees also will be provided the opportunity to consider Alcoa's final Work Plan. Within 14 days after receipt of the final Work Plan, the Lead Administrative Trustee will provide written notice to Alcoa whether or not the Trustees find that there are material inconsistencies between the Work Plan and the construction criteria in this Marsh Implementation Plan. If any material inconsistencies are identified, or if the Trustees need additional information about details included in the Work Plan to ensure compliance with the construction criteria, the Lead Administrative Trustee will arrange a meeting between Alcoa and the Trustees to discuss the Work Plan. The Trustees will provide a written statement of their position with respect to any material inconsistencies within 14 days of the meeting.

2.3 Construction Certification

Within 30 days after the completion of construction, Alcoa will provide its post-construction report to the Lead Administrative Trustee for Trustee evaluation in accordance with Paragraph 46 of the Consent Decree. The post-construction report will consist of an as-built survey and aerial photographs, as described below. After receiving the report, the Lead Administrative Trustee may establish a date for a construction inspection by the Trustees, in accordance with Paragraph 46 of the Consent Decree, such inspection to occur within 14 days of receipt of post-construction report.

The Trustees shall evaluate the report and the results of any inspection they may undertake, and if the Trustees agree that the construction criteria identified in Section 2.1 have been met, the Lead Administrative Trustee shall issue a written notice on behalf of all Trustees certifying completion of construction of the Marsh Restoration Project in accordance with Paragraph 47 of the Consent Decree ("Certification of Completion of Marsh Construction") within the later of 30 days after receipt of the Post-Construction Report or any construction inspection of the Marsh Project Site requested under Paragraph 46 of the Consent Decree. If the Trustees do not agree that the construction criteria have been met, the Lead Administrative Trustee will arrange a meeting between the Trustees and Alcoa to discuss whether the construction criteria have been met and whether any additional steps are needed to meet the construction criteria.

The timelines in this Section 2.3 have been intentionally shortened to allow planting of the marsh to commence as soon as possible after the marsh has been constructed.

2.3.1 As-Built Survey

After earthwork is complete, but before planting is initiated, a sealed topographic as-built survey will be conducted by a licensed surveyor. The survey will be conducted to verify that the construction criteria have been met.

2.3.2 Aerial Photography

After earthwork is complete, but before planting is initiated, aerial photographs will be taken with a scale of approximately 1 inch=100 feet.

2.4 Construction Completion

Alcoa shall establish that the Marsh Restoration Project meets the construction criteria required to obtain a Certification of Completion of Marsh Construction by July 1, 2007.

2.5 Planting Criteria

Alcoa shall implement the Marsh Restoration Project in accordance with the following planting criteria:

a. Planting will be undertaken in areas with elevations that are considered to be supportive of acceptable emergent marsh vegetation, *i.e.* elevations that are no less than +0.5 ft. and no greater than + 1.6 ft. NGVD. Planting areas will be designated based on final elevation achieved during construction.

b. Approximately 4 in. plugs of *Spartina alterniflora* will be planted on 5 ft. centers, in all planting areas in the constructed marsh.

c. Approximately 4 in. plugs of *Spartina patens* will be planted in 2 to 3 rows, on 3 to 5 ft. centers, on the lower edge of the Transitional Zone above the upper elevation limit for *Spartina alterniflora*. To reduce erosion before the plants are established, the remainder of the Transitional Zone will be seeded with a fast-growing grass.

3.0 PERFORMANCE MONITORING

Performance criteria define short-term milestones that, if met, will provide reasonable assurance of project success in the long term. Monitoring provides information necessary to determine whether the project is trending toward these milestones or whether corrective action may be appropriate.

3.1 Performance Criteria

The performance criteria are listed below.

- a. Phase 1. The performance criterion for Phase 1 is growth of emergent marsh vegetation that results in achievement of the "Phase 1 Milestone." The Phase 1 Milestone shall be considered achieved when the planted areas of the constructed marsh, on average, have at least 75% foliar cover in the Onshore Marsh and at least 75% foliar cover in the Offshore Marsh.
- b. Phase 2. The performance criterion for Phase 2 is sustained life of emergent marsh vegetation that results in achievement of the "Phase 2 Milestone." Once the Phase 1 Milestone is achieved, the project will enter Phase 2 monitoring which will continue until the Phase 2 Milestone is achieved. The Phase 2 Milestone is achieved when the planted areas of the constructed marsh, on average, continue to have at least 75% foliar cover and this condition is maintained without Major Corrective Action for a period of two (2) years.

- c. In determining whether the Phase 1 Milestone or the Phase 2 Milestone has been achieved, the following additional criteria must be met:
 - (i) The foliar cover of acceptable plant species (as identified at Section 3.2.5) must be approximately 90% of the total foliar cover estimate;
 - (ii) Primary channels must be open and free-flowing, without substantial sediment buildup or evidence of closure;
 - (iii) The minimum water depth at average low water level shall be no less than 0.5 ft in primary channels, and secondary channels must provide water flow at average high water level, but need not contain standing water at average low water level; and
 - (iv) Approximately 45 acres of emergent marsh must be present based on aerial photo review.
- d. Maintenance of compliance with construction criteria shall not be required following Certification of Completion of Marsh Construction and shall not be a performance criterion.

3.2 Monitoring Events

3.2.1 Monitoring Schedule

Marsh performance monitoring will be conducted in two phases for up to a maximum of seven (7) years after Certification of Completion of Marsh Construction. Phase 1, which is considered a post-planting growth phase, will continue until the Phase 1 Milestone is achieved. Phase 2, which is a performance maintenance period, will continue for at least two (2) years to determine whether the Phase 2 Milestone is achieved. The monitoring period will conclude at the earlier of seven (7) years after Certification of Completion of Marsh Construction or achievement of the Phase 2 Milestone.

3.2.2 Monitoring Methods

Monitoring will be conducted using both qualitative and quantitative field methods to determine progress toward achievement of the Phase 1 and Phase 2 Milestones. The methods employed will depend on the specific objective for that phase of monitoring. Qualitative monitoring will involve visual observations and professional judgment. Qualitative surveys may also incorporate ground-level photographs to document trends in desired characteristics. Quantitative monitoring will involve the use of vegetation surveys and/or aerial photo techniques that quantitatively document relevant marsh characteristics and progress toward performance metrics. The monitoring methods are listed in Table 3.1.

If a modification to a method described in Table 3.1 is proposed for use during Phase 2 monitoring, Alcoa shall propose the modifications to the Lead Administrative Trustee, who will arrange a meeting with Alcoa and the Trustees, if necessary, to discuss proposed changes and new data objectives.

Table 3.1 Post-construction Monitoring Methods

Event	Schedule	Characteristics to Evaluate	Methods
Post-construction Report	Within 30 days after completion of construction	Elevation and slope of constructed marsh	As-Built Survey by licensed surveyor <ul style="list-style-type: none"> Survey of all planned planting areas Survey of channel depth and grade As-built drawing showing channels, swales, and planting areas
		Breakwater	As-Built Survey by licensed surveyor
		Aerial photographs	Scale 1:100 (digitized)
50% Survival	Monitoring completed by the end of 1 st Growing Season; Report due February 28 th following the end of the 1 st growing season	Plant Survival	Visual observation (Primary) Field inspection ¹ (Verification method, if needed)
Phase 1 Monitoring	Annual; Report due February 28 th following the end of the Growing Season	Foliar Cover (Qualitative)	Visual observation
		Desirable vegetation	Visual observation
		Breakwater integrity	Visual observation
		Channel integrity	Visual observation
		Wildlife utilization	Visual observation
End of Phase 1 Monitoring	End of Phase 1	Foliar cover (quantitative)	Foliar cover analysis <ul style="list-style-type: none"> Aerial photo review and Cruise Survey Method² (Primary) Point Intercept Method³ (Verification method for desirable species, if needed) Other quantitative method acceptable to Alcoa and the Trustees (must include photographs).
		Desirable vegetation	Determined as part of foliar cover analysis
		Breakwater integrity	Visual observation
		Channel integrity	Visual observation
		Wildlife utilization	Visual observation
		Aerial Photograph	Scale 1:100 (digitized)
Phase 2 Monitoring	Annual; Report due February 28 th following the end of	Foliar Cover (Qualitative)	Visual observation
		Desirable vegetation	Visual observation
		Breakwater integrity	Visual observation

¹ The field inspection shall consist of an inspection of plants on several 3 to 5 ft. wide transects that are representative of Onshore and Offshore marsh. The number of live and dead planted plugs on each transect will be counted, and the percent survival in each marsh section will be an average of the percent surviving on the transects in each section.

² The Cruise Survey Method consists of delineation of foliar cover on an aerial photo followed by limited field validation. Vegetative composition and percent desirable species are estimated in the field during the validation exercise.

³ The Point Intercept Method consists of employing a sighting device or pin/point frame along a set of transects to verify species composition. This method will be used, if needed, for field verification of Cruise Survey Method. Available Online: <http://fire.r9.fws.gov/ifcc/monitor/point-intercept.htm>

Table 3.1 Post-construction Monitoring Methods

Event	Schedule	Characteristics to Evaluate	Methods
End of Phase 2 Monitoring	the Growing Season	Channel integrity	Visual observation
		Wildlife utilization	Visual observation
	End of Phase 2	Foliar cover	Foliar cover analysis <ul style="list-style-type: none"> Aerial photo review and Cruise Survey Method (Primary) Point Intercept Method (Verification method for desirable species, if needed)
		Desirable vegetation	Determined as part of foliar cover analysis
		Breakwater integrity	Visual observation
		Channel integrity	Visual observation
		Wildlife utilization	Visual observation
		Aerial Photograph	Scale 1:100 (digitized)

3.2.3 Phase 1 Monitoring

The objective for Phase 1 monitoring is to document progress toward the establishment of a functioning marsh and to determine whether the Phase 1 Milestone has been met. At the end of the first growing season Alcoa will monitor the marshes to determine if at least 50% of the planted vegetation has survived in each of the seven (7) monitoring zones of the Onshore Marsh and the Offshore Marsh, as depicted in Annex 3-C (or in a similar map accepted by Alcoa and the Trustees). Alcoa shall provide ten (10) days advance notice to the Lead Administrative Trustee of that monitoring event. During the survival assessment, plants inspected by Alcoa will be considered alive if: (1) above-ground vegetation is green and growing; (2) original above-ground vegetation has been lost but new sprouts have emerged; or (3) original above-ground vegetation has been lost but the roots and rhizomes are alive. Thereafter, marsh growth and development will be monitored at least annually with qualitative and/or quantitative monitoring methods that are consistent with Table 3.1 to determine whether corrective action is necessary. Within 14 days after Alcoa determines, based on a quantitative and/or qualitative assessment, that corrective action is necessary, Alcoa will provide notice to the Lead Administrative Trustee, and it will follow corrective action procedures in accordance with Paragraphs 53-62 of the Consent Decree. If Alcoa determines that no corrective action is necessary, the information obtained during the inspections can be included in the annual report to be provided pursuant to Section 5.3.

The first monitoring event to determine whether the Phase 1 Milestone has been achieved will be conducted between October 15 and November 15 and is expected to occur at the end of the second or third growing season, at the discretion of Alcoa. The inspection will focus on the density and composition of transplanted and naturally occurring vegetation, and the relative growth of undesirable species. The integrity of the constructed breakwater will be noted. Tidal channels will be inspected to assure they are free flowing and have no obstructions. Wildlife utilization will be documented but not quantitatively measured.

Characteristics to be monitored include:

- Foliar cover (quantitative)

- Growth of invasive undesirable vegetation (quantitative)
- Breakwater integrity (qualitative)
- Channel integrity (qualitative)
- Wildlife utilization (qualitative)
- Size of the emergent marsh (aerial photograph)
- Aerial photograph

If the data collected during the monitoring event indicate that the Phase 1 Milestone has been met, Alcoa will provide its Phase 1 Milestone Report to the Lead Administrative Trustee for Trustee evaluation. After receiving the report, the Lead Administrative Trustee may establish a date for an inspection by the Trustees, as authorized by Paragraph 43(h) of the Consent Decree.

The Trustees shall evaluate the report and the results of any inspection they may undertake, and within the later of 60 days after receipt of the Phase 1 Milestone Report or any joint inspection of the Marsh Project Site requested under Paragraph 43(h) of the Consent Decree, the Lead Administrative Trustee will notify Alcoa whether the Trustees agree that the Phase 1 Milestone has been met.

If the Trustees agree that the Phase 1 Milestone has been met, then Alcoa shall commence Phase 2 Monitoring. If the Trustees do not agree that the Phase 1 Milestone has been met in the Marsh Restoration Project, Alcoa will continue to monitor until such milestone has been met up to a maximum of seven (7) years after Certification of Completion of Marsh Construction or until the Certification of Completion of Marsh Restoration Project is issued pursuant to Paragraph 50 of the Consent Decree.

3.2.4 Phase 2 Monitoring

Phase 2 monitoring will begin when the Phase 1 Milestone has been achieved. The objective for Phase 2 monitoring is to document the sustained performance of the constructed marsh for desired characteristics following achievement of the Phase 1 Milestone and to determine when the Phase 2 Milestone has been met. During Phase 2, the marsh will be monitored once per year, at the end of the growing season.

A Phase 2 monitoring inspection will be conducted at the end of the second growing season after Phase 1. The objective of the inspection will be to document that the Phase 2 Milestone has been achieved and the marsh is performing at the desired level.

Characteristics to be monitored include:

- Foliar cover (quantitative)
- Growth of invasive undesirable vegetation (quantitative)
- Breakwater integrity (qualitative)
- Channel integrity (qualitative)
- Wildlife utilization (qualitative)
- Size of the emergent marsh (aerial photograph)
- Aerial photograph

If the data collected during the Phase 2 monitoring indicate that the Phase 2 Milestone has been met, Alcoa will provide its Phase 2 Milestone Report to the Lead Administrative Trustee for Trustee evaluation. After receiving the report, the Lead Administrative Trustee may establish a date for an inspection by the Trustees, as authorized by Paragraph 43(h) of the Consent Decree.

The Trustees shall evaluate the report and the results of any inspection they may undertake, and within the later of 60 days after receipt of the Phase 2 Milestone Report or any joint inspection of the Marsh Project Site requested under Paragraph 43(h) of the Consent Decree, the Lead Administrative Trustee will notify Alcoa whether the Trustees agree that the Phase 2 Milestone has been met.

If the Trustees agree that the Phase 2 Milestone has been met, then the Lead Administrative Trustee will issue a letter certifying that the Marsh Restoration Project is complete (Certification of Completion of Marsh Restoration Project) in accordance with Paragraph 50 of the Consent Decree. If the Trustees do not agree that the Phase 2 Milestone has been met in the Marsh Restoration Project, Alcoa will continue to monitor until such milestone has been met up to a maximum of seven (7) years after Certification of Completion of Marsh Construction or until the Certification of Completion of Marsh Restoration Project is issued pursuant to Paragraph 50 of the Consent Decree.

3.2.5 Acceptable and Unacceptable Marsh Plant Species

Acceptable marsh plant species are species that will be planted or are natural native colonizers in the intertidal areas. Acceptable marsh vegetation includes native species commonly associated with intertidal marsh habitats along the Texas Gulf coast. The acceptable plant species for this project are shown below:

Preferred Species to be Planted

Smooth Cordgrass (*Spartina alterniflora*)
Marshhay Cordgrass (*Spartina patens*) in transition zones to uplands

Other Acceptable Species via Natural Colonization

Olney Bulrush (*Schoenoplectus americanus*)
California Bulrush (*Schoenoplectus californicus*)
Salt marsh Bulrush (*Schoenoplectus robustus*)
Black Needlerush (*Juncus roemerianus*)
Sedges (*Carex* spp)
Common Reed (*Phragmites australis*)
Seashore Paspalum (*Paspalum vaginatum*)
Seashore Salt Grass (*Distichlis spicata*)
Sea-oxeye (*Borrchia frutescens*)
Saw Grass (*Cladium jamaicense*)
Southern Cattail (*Typha domingensis*)
Narrow-leaved Cattail (*Typha angustifolia*)
Common Cattail (*Typha latifolia*)
Yellow Loosestrife (*Lysamachia* spp)

Pickerselweed (*Pontederia cordata*)
Arrowhead (*Sagittaria* spp)
Knotweed (*Polygonum* spp)

The following plant species should not be planted in the constructed marsh, and they shall be removed if observed during monitoring events:

Unacceptable Species

Saltcedar (*Tamarix* sp.)
Chinese Tallow (*Sapium sebiferum*)

Alcoa shall not plant any plant species that are prohibited from being planted under the terms of any permit issued to Alcoa in connection with the Marsh Restoration Project.

4.0 MAJOR AND MINOR CORRECTIVE ACTIONS

4.1 Minor Corrective Actions

During Phase 1 monitoring, normal routine maintenance of the marsh is expected. Routine maintenance includes activities that may be considered minor corrective actions. Alcoa may conduct any minor corrective actions that it believes are necessary to assist or enhance the growth and development of the marsh. Alcoa may perform such activities without prior approval from the Lead Administrative Trustee, however, the Lead Administrative Trustee may suggest that a minor corrective action be undertaken. Examples of minor corrective actions include the following:

- a. Replanting or reseeding portions of the marsh, where individual replanted or reseeded areas are less than 10% of the contiguous area of the marsh.
- b. Removal of debris and other obstructions from channels.
- c. Removal of unacceptable plant species specified in Section 3.2.5.

Alcoa and Trustees agree that, during Phase 2, except for the removal of debris or other obstructions from channels, minor corrective actions will not be performed without prior approval of the Lead Administrative Trustee.

4.2 Major Corrective Actions

After Certification of Completion of Marsh Construction, the Lead Administrative Trustee, on behalf of the Trustees, may require Alcoa to undertake a corrective action pursuant to the requirements of Paragraphs 53-62 of the Consent Decree and this Implementation Plan. Prior to performing any major corrective action, Alcoa will obtain approval of the Lead Administrative Trustee pursuant to Paragraphs 56-58 of the Consent Decree.

4.3 Triggers for Consideration of Major and Minor Corrective Actions

Plant survival after the first growing season is an important early milestone for the potential success of the constructed marsh. Alcoa and the Trustees expect that, on a small scale, there will be varying success rates for survival of plants from the initial planting, with certain areas of

the marsh being more successful than others. In order to meet the Phase 1 Milestone, as a minor corrective action, Alcoa may choose to replant or reseed small areas of the marsh with a lower success rate in order to achieve the Phase 1 Milestone. However, if an inspection demonstrates that there is less than 50% survival of planted vegetation in any of the seven (7) monitoring zones of the Onshore Marsh and the Offshore Marsh, as depicted in Annex 3-C (or in a similar map accepted by Alcoa and the Trustees) at the end of the first growing season, Alcoa will meet with the Trustees to discuss possible causes and whether corrective action, including a major corrective action, is needed. The major corrective action may include replanting and/or reseeding large portions of the marsh subject to Section 4.4 below. Plugs from daughter shoots within better performing planted platforms may be used in replanting efforts if planting material available in the nursery is insufficient to complete the replanting.

If, at the time Alcoa chooses to conduct the quantitative monitoring inspection to determine achievement of the Phase 1 Milestone, field studies indicate that the constructed marsh has not achieved that milestone, Alcoa and the Trustees will meet to discuss the reasons why that milestone has not been met and to evaluate possible corrective actions. If Alcoa and the Trustees agree that major corrective action is appropriate or if the Lead Administrative Trustee, on behalf of the Trustees, issues a letter requiring major corrective action, Alcoa will be responsible for implementing the major corrective action subject to dispute resolution under the Consent Decree. Once the Phase 1 Milestone is met and the Lead Administrative Trustee has issued a notice that the marsh is considered to be established, in accordance with Section 3.2.3, Phase 2 monitoring will begin.

If after two (2) years of Phase 2 monitoring, the marsh has not achieved the Phase 2 Milestone, Alcoa and the Trustees will meet to evaluate the cause of why that milestone has not been met and whether major corrective action is appropriate. If Alcoa and the Trustees agree that major corrective action is appropriate or if the Lead Administrative Trustee, on behalf of the Trustees, issues a letter requiring major corrective action, Alcoa will be responsible for implementing the major corrective action, subject to dispute resolution under the Consent Decree. Additional annual monitoring events will be required until a maximum of 7 years after Certification of Completion of Marsh Construction or until the marsh reaches the Phase 2 Milestone and the Lead Administrative Trustee issues a Certification of Completion of the Marsh Restoration Project.

The Trustees have the option of extending the Phase 2 monitoring period by up to two (2) years if major corrective actions are required during the Phase 2 monitoring period or if the Phase 2 Milestone has not been met after two (2) years. Under no circumstances (during either Phase 1 or 2) will the use of fertilizers be allowed to meet an applicable milestone nor will monitoring continue for more than seven (7) years following Certification of Completion of Marsh Construction.

4.4 Limitations on Performance of Major Corrective Action

- a. After Alcoa has submitted a post-construction report establishing that construction has been completed in accordance with the construction criteria, major corrective actions shall be limited to the following described activities and in no event shall Alcoa be required to perform major corrective actions, which either individually or in the aggregate, exceed the applicable limitation for each such activity as set forth in this

Section 4.3:

- i. Mechanical earthmoving activities will be limited to either a total of 3 separate mobilizations of earthmoving equipment or a total of 9 acres;
 - (A) If the earthmoving activity involves vegetated wetlands, each mobilization must include a cumulative area of more than 1 acre of vegetated wetlands.
 - (B) Mechanical removal of sediment/plugs from primary channels will be subject to the 3-mobilizations limit, and will include the correction of the cause of the obstruction;
 - ii. The addition of stone to the breakwater will be limited to 20% of the length of the breakwater at the time of submission of the post-construction report; and/or
 - iii. Reworking of the breakwater will be limited to 20% of the volume of the breakwater at the time of submission of the post-construction report.
- b. After Alcoa has met the 50% plant survival requirement described in Section 3.2.3, replanting will be limited to a total of 100% of the total plants used in the original planting of constructed marsh.
- c. The above activity-based corrective action limits are not subject to the monetary limitation for restoration activities conducted in response to an Event, as described in Paragraph 63 of the Consent Decree.

5.0 RECORD KEEPING AND REPORTING

Results of all field monitoring efforts and activities will be documented and provided to the Lead Administrative Trustee for review as described below. Reporting will involve five types of reports:

- Post-construction report;
- Field log with annual summary of qualitative monitoring events;
- Phase 1 Milestone, Phase 2 Milestone and/or Final Project Report;
- Corrective Action documentation; and
- Event documentation

5.1 Post-construction Report

A post-construction report will be prepared that includes the as-built survey and aerial photographs. The post construction report will be provided to the Lead Administrative Trustee within 30 days after all construction activities have been completed. The information provided in the post-construction report will be used by the Lead Administrative Trustee, after consulting with the other Trustees, to certify completion of construction.

5.2 Corrective Action Documentation

Alcoa will provide to the Lead Administrative Trustee corrective action documentation in accordance with Paragraphs 54 - 57 and 59 - 60 of the Consent Decree.

5.3 Field Log with Annual Summary of Qualitative Monitoring Events

During periods when no quantitative field surveys are conducted (i.e., only qualitative surveys are performed), a field log will be maintained to record all field activities. Examples of information and/or activities that will be recorded include:

- All scheduled or unscheduled site visits,
- Monitoring events,
- Daily observations and daily activities, including those relating to minor or major corrective actions and events, and,
- Plant survival.

A copy of the field log and a description of the characteristics evaluated in the qualitative surveys required by Table 3.1 will be provided to the Lead Administrative Trustee on an annual basis, within 60 days following the Fall monitoring event.

5.4 Phase 1/Phase 2 Milestone Reports

When quantitative Phase 1/Phase 2 surveys are conducted, a formal monitoring report will be prepared to document the field survey methods required by Table 3.1, results and analysis associated with each monitoring event. The report will include at a minimum the following:

- A brief summary of quantitative and qualitative data collected.
- Monitoring results and analysis, including tables and photographs (when appropriate).
- A copy of the field log.
- Site maps showing data collection locations and results, as appropriate.
- Summary of any minor corrective actions taken.
- Observations that suggest whether significant problems may exist, an evaluation of possible causes and recommended major corrective actions.
- Results/outcomes from previous corrective actions.

Additionally the following observations and actions should be made or carried out during each monitoring event.

- Record tidal stream depths relative to surface elevation of the planting area, and conditions of the primary channel connections.
- Record the salinity and temperature of the water at one location on the site.
- Record and generally locate on the site map the presence and approximate numbers and density of any epibenthic invertebrates, wading birds, and fish observed during the monitoring.
- Remove all trash from the site.

5.5 Event Documentation

Alcoa will provide to the Lead Administrative Trustee event documentation in accordance with Paragraphs 64, 66, and 68-70 of the Consent Decree.

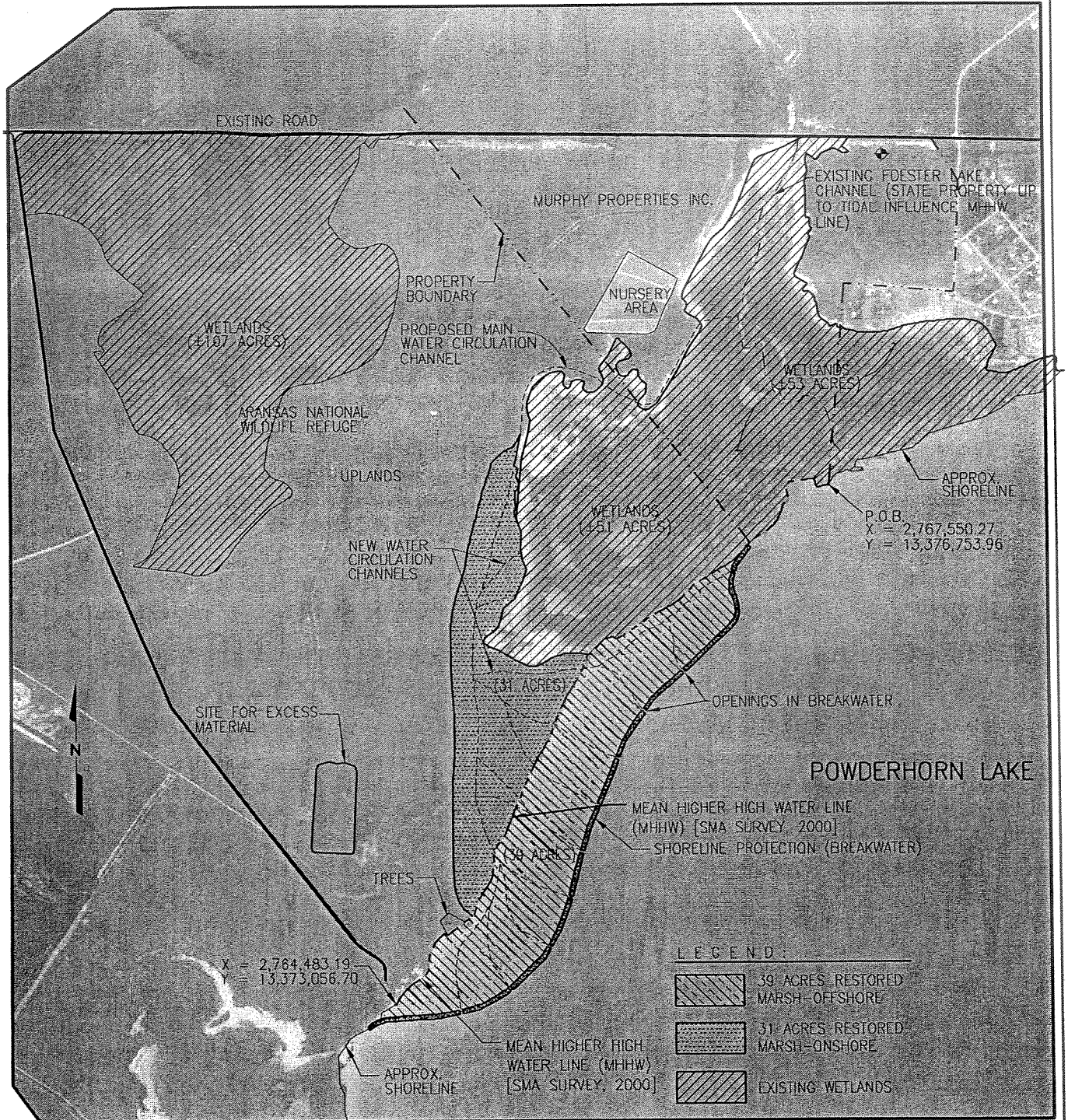
6.0 FINAL CERTIFICATION

If the data collected during the Phase 2 monitoring event indicate that the Phase 2 Milestone has been met, Alcoa will provide its Phase 2 Milestone Report to the Lead Administrative Trustee for Trustee evaluation. After receiving the report, the Lead Administrative Trustee may establish a date for an inspection by the Trustees, as authorized by Paragraph 49 of the Consent Decree.

The Trustees shall evaluate the report and the results of any inspection they may undertake, and within the later of 60 days after receipt of the Phase 2 Milestone Report or any joint inspection of the Marsh Project Site requested under Paragraph 49 of the Consent Decree, the Lead Administrative Trustee will notify Alcoa whether the Trustees agree that the Phase 2 Milestone has been met.

If the Trustees agree that the Phase 2 Milestone has been met, then the Lead Administrative Trustee shall issue the Certification of Completion of the Marsh Restoration Project in accordance with Paragraph 50 of the Consent Decree. If the Trustees do not agree that the Phase 2 Milestone has been met at the Marsh Restoration Project, Alcoa and the Trustees will meet to discuss the deficiency. Alcoa will continue to monitor until a maximum of seven (7) years after Certification of Completion of Marsh Construction or until the Phase 2 Milestone has been met and the Certification of Completion of Marsh Restoration Project is issued pursuant to Paragraph 50 of the Consent Decree.

PROPOSED MARSH RESTORATION DETAILS



SHINER MOSELEY AND ASSOCIATES, INC.
 ENGINEERS & CONSULTANTS

555 North Carancahua Street, Suite 1650 Corpus Christi, Texas 78478

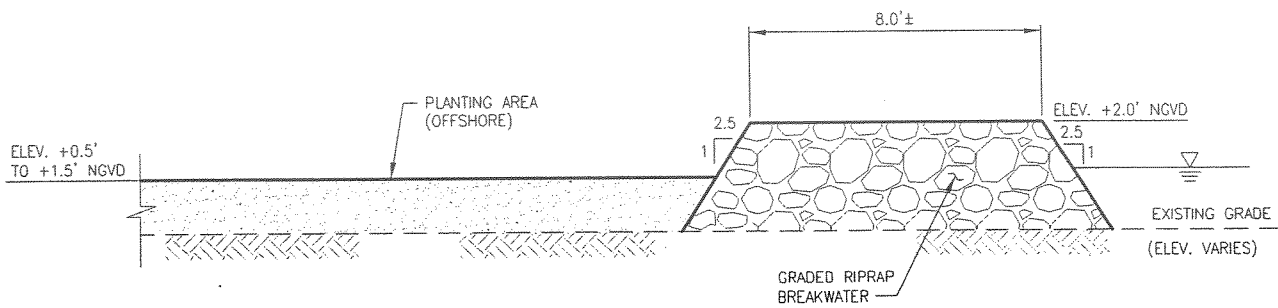
DESCRIPTION/ACTIVITIES: RESTORATION OF MARSH AND OYSTER REEF HABITAT, AND ENHANCEMENT OF RECREATIONAL FISHING OPPORTUNITIES

JOB NO.: 90040

DATE: 11/00

REV. DATE: 06/28/00

Annex 3-A



TYPICAL SECTION - ROCK BREAKWATER

SCALE: N.T.S.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

ENGINEER: DANIEL J. HEILMAN
 LICENSE NO.: 86936
 DATE: 3/19/03



SHINER MOSELEY AND ASSOCIATES, INC.
 ENGINEERS & CONSULTANTS
 555 North Carancahua Street, Suite 1650
 Corpus Christi, Texas 78478

SMA JOB NO.: 20224

ALCOA

TYPICAL SECTION -
 ROCK BREAKWATER

MARSH RESTORATION PROJECT

Annex 3-B

Legend

--- Marsh Section Boundaries
ALCOA will provide coordinates for boundary/line endpoints upon completion of construction

